

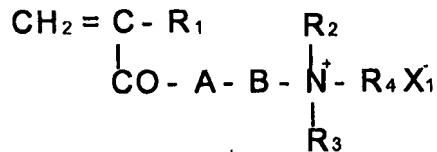
*Requested
DPL
7/16/2006*

Application No. 10/517,011
Filed: July 7, 2005
TC Art Unit: 1731
Confirmation No.: 2774

AMENDMENT TO THE CLAIMS

1. (CANCELLED)

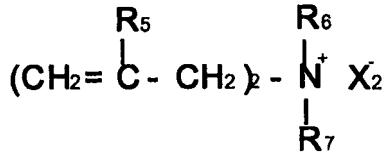
2. (CURRENTLY AMENDED) A water-soluble polymer dispersion in which a water-soluble polymer having at least one type of ionicity selected from among cationicity and amphotericity and occurring in the form of fine particles with a particle size of not greater than 100 μm and a polyalkylenimine in the sulfate salt form coexist, wherein the polymer is produced by dispersion polymerization of a monomer (or monomer mixture) comprising 5 to 100 mole percent of a monomer represented by the general formula (1) and/or (2) given below, 0 to 50 mole percent of a monomer represented by the general formula (3) given below and 0 to 95 mole percent of a water-soluble nonionic monomer with stirring in the presence of said polyalkylenimine in the sulfate salt form;



General formula (1)

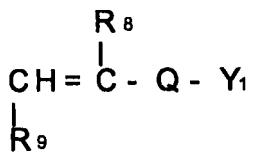
wherein In the general formula (1), R_1 is a hydrogen atom or a methyl group, R_2 and R_3 may be the same or different and each is an alkyl or an alkoxy group containing 1 to 3 carbon atoms or a benzyl group, R_4 is a hydrogen atom, an alkyl or alkoxy group containing 1 to 3 carbon atoms or a benzyl group. A represents an oxygen atom or NH , B represents an alkylene or an alkoxylen group

containing 2 to 4 carbon atoms, and X₁ represents a sulfate anion.) ;



General formula 2),

wherein (In the general formula (2), R₅ represents a hydrogen atom or a methyl group, R₆ and R₇ each represents an alkyl or an alkoxy group containing 1 to 3 carbon atoms or a benzyl group, and X₂ represents a sulfate anion.) ;



General formula (3),

wherein (In the general formula (3), R₈ represents a hydrogen atom, a methyl group or a carboxymethyl group, Q represents SO₃, C₆H₄SO₃, CONHC(CH₃)₂CH₂SO₃, C₆H₄COO or COO, R₉ represents a hydrogen atom or COOY₂, and Y₁ or Y₂ represents a hydrogen atom or a cation.)

3. (PREVIOUSLY PRESENTED) A water-soluble polymer dispersion in which a water-soluble polymer having at least one type of ionicity selected from among anionicity and nonionicity and occurring in the form of fine particles with a particle size of not greater than 100 µm and a polyalkylenimine in the sulfate salt form coexist, wherein the polymer is produced by dispersion polymerization of a monomer composition (mixture) comprising at least one monomer selected from among monomers represented by said

general formula (3) given above and water-soluble nonionic monomers in the presence of said polyalkylenimine in the sulfate salt form.

4-6. (CANCELLED)

7. (PREVIOUSLY PRESENTED) A water-soluble polymer dispersion in which a water-soluble polymer having at least one type of ionicity selected from among cationicity, an amphotericity, a nonionicity and an anionicity and occurring as fine particles with a particle size of not greater than 100 μm and a polyalkylenimine in the sulfate salt form coexist,

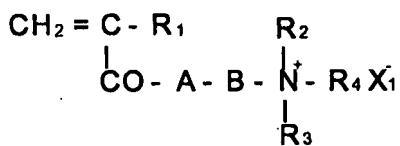
wherein the polyalkylenimine is polyethylenimine.

8. (PREVIOUSLY PRESENTED) A water-soluble polymer dispersion in which a water-soluble polymer having at least one type of ionicity selected from among cationicity, an amphotericity, a nonionicity and an anionicity and occurring as fine particles with a particle size of not greater than 100 μm and a polyalkylenimine in the sulfate salt form coexist,

wherein the polyalkylenimine amounts to 20 to 200% by mass relative to the water-soluble polymer.

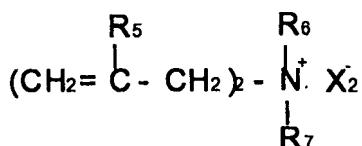
9. (CURRENTLY AMENDED) A method of producing water-soluble polymer dispersions, wherein a dispersion of fine particles of a polymer having at least one type of ionicity selected from among cationicity and amphotericity is produced by subjecting a monomer (or monomer mixture) comprising 5 to 100 mole percent of a monomer represented by the general formula (1) and/or (2) given below, 0

to 50 mole percent of a monomer represented by the general formula (3) given below and 0 to 95 mole percent of a water-soluble nonionic monomer to dispersion polymerization with stirring in the presence of a polyalkylenimine in the sulfate salt form-;_



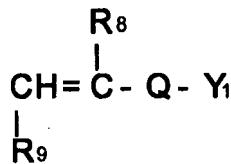
General formula (1),_

wherein ~~(In)~~ the general formula (1), R₁ is a hydrogen atom or a methyl group, R₂ and R₃ may be the same or different and each is an alkyl or alkoxy group containing 1 to 3 carbon atoms or a benzyl group, R₄ is a hydrogen atom, an alkyl or alkoxy group containing 1 to 3 carbon atoms or a benzyl group. A represents an oxygen atom or NH, B represents an alkylene or alkoxylenne group containing 2 to 4 carbon atoms, and X₁ represents a sulfate anion-);_



General formula (2),_

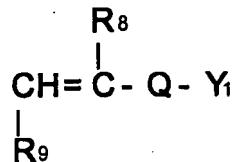
wherein ~~(In)~~ the general formula (2), R₅ represents a hydrogen atom or a methyl group, R₆ and R₇ each represents an alkyl or alkoxy group containing 1 to 3 carbon atoms or a benzyl group, and X₂ represents a sulfate anion-);_



General formula (3),

wherein (In the general formula (3), R₈ represents a hydrogen atom, a methyl group or a carboxymethyl group, Q represents SO₃, C₆H₄SO₃, CONHC(CH₃)₂CH₂SO₃, C₆H₄COO or COO, R₉ represents a hydrogen atom or COOY₂, and Y₁ or Y₂ represents a hydrogen atom or a cation.)

10. (CURRENTLY AMENDED) A method of producing water-soluble polymer dispersions, wherein a dispersion of fine particles of a polymer having at least one type of ionicity selected from among anionicity and nonionicity is produced by subjecting a monomer composition (mixture) comprising at least one monomer selected from among monomers represented by the general formula (3) given below and water-soluble nonionic monomers to dispersion polymerization with stirring in the presence of a polyalkylenimine in the sulfate salt form:



General formula (3),

wherein (In the general formula (3), R₈ represents a hydrogen atom, a methyl group or a carboxymethyl group, Q represents SO₃, C₆H₄SO₃, CONHC(CH₃)₂CH₂SO₃, C₆H₄COO or COO, R₉ represents a hydrogen

atom or COOY₂, and Y₁ or Y₂ represents a hydrogen atom or a cation.)

11. (PREVIOUSLY PRESENTED) A use of the water-soluble polymer dispersion according to any of Claims 2, 3, 7, 8, 23, 27, 31 and 35, wherein the water-soluble polymer dispersion is added to papermaking raw material before papermaking for pretreatment thereof.

12. (PREVIOUSLY PRESENTED) A use of the water-soluble polymer dispersion according to any of Claims 2, 3, 7, 8, 23, 27, 31 and 35, wherein the water-soluble polymer dispersion is added to papermaking raw material before papermaking to thereby improve the freeness thereof.

13. (PREVIOUSLY PRESENTED) A use of the water-soluble polymer dispersion according to any of Claims 2, 3, 7, 8, 23, 27, 31 and 35, wherein the water-soluble polymer dispersion is added to papermaking raw material before papermaking, in which a sizing agent coexists, to thereby improve the degree of sizing.

14. (PREVIOUSLY PRESENTED) A use of the water-soluble polymer dispersion according to any of Claims 2, 3, 7, 8, 23, 27, 31 and 35, wherein the water-soluble polymer dispersion is added to paper making raw material before papermaking to thereby improve the yield, followed by papermaking.

15. (PREVIOUSLY PRESENTED) A use of the water-soluble polymer dispersion according to any of Claims 2, 3, 7, 8, 23, 27, 31 and

35, wherein the water-soluble polymer dispersion is added to paper making raw material before papermaking in combination with an inorganic and/or organic anionic substance to thereby improve the yield, followed by papermaking.

16. (PREVIOUSLY PRESENTED) A use of the water-soluble polymer dispersion according to any of Claims 2, 3, 7, 8, 23, 27, 31 and 35, wherein the water-soluble polymer dispersion is added to organic sludge or paper mill-derived sludge to cause flocculation, followed by dewatering by means of dewatering equipment.

17. (PREVIOUSLY PRESENTED) A use of the water-soluble polymer dispersion according to any of Claims 2, 3, 7, 8, 23, 27, 31 and 35, wherein the water-soluble polymer dispersion is added to organic sludge or paper mill-derived sludge in combination with an amphoteric or anionic water-soluble polymer to cause flocculation, followed by dewatering by means of dewatering equipment.

18-22. (CANCELLED)

23. (PREVIOUSLY PRESENTED) A water-soluble polymer dispersion according to Claim 2, wherein the polyalkylenimine is polyethylenimine.

24-26. (CANCELLED)

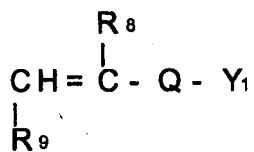
27. (CURRENTLY AMENDED) A water-soluble polymer dispersion according to Claim 2, wherein the polyalkylenimine amounts to 20 to 200% by mass relative to the water-soluble polymer.

28-30. (CANCELLED)

31. (PREVIOUSLY PRESENTED) A water-soluble polymer dispersion according to Claim 7, wherein the polyalkylenimine amounts to 20 to 200% by mass relative to the water-soluble polymer.

32-34. (CANCELLED)

35. (CURRENTLY AMENDED) A water-soluble polymer dispersion according to Claim 31, wherein the water-soluble polymer is produced by dispersion polymerization of a monomer composition (mixture) comprising at least one monomer selected from among monomers represented by said general formula (3) given below and water-soluble nonionic monomers in the presence of said polyalkylenimine in the sulfate salt form.;



General formula (3)

wherein (In the general formula (3), R₈ represents a hydrogen atom, a methyl group or a carboxymethyl group, Q represents SO₃, C₆H₄SO₃, CONHC(CH₃)₂CH₂SO₃, C₆H₄COO or COO, R₉ represents a hydrogen atom or COOY₂, and Y₁ or Y₂ represents a hydrogen atom or a cation.)